Nos. 2014-1139, -1144

IN THE
UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

ARIOSA DIAGNOSTICS, INC., AND NATERA, INC.,

Plaintiffs-Appellees,

DNA DIAGNOSTICS CENTER, INC.,

Counterclaim Defendant-Appellee,

v.

SEQUENOM, INC., AND

SEQUENOM CENTER FOR MOLECULAR MEDICINE, LLC.

Defendants-Appellants,

ISIS INNOVATION LIMITED,

Defendant.

Appeals from the United States District Court for the Northern District of California in Nos. 3:11-cv-06391-SI, 3:12-cv-00132-SI, Judge Susan Y. Illston

AMICUS CURIAE BRIEF OF THE COALITION FOR 21ST CENTURY MEDICINE IN SUPPORT OF SEQUENOM, INC.'S AND SEQUENOM CENTER FOR MOLECULAR MEDICINE, LLC'S PETITION FOR REHEARING *EN BANC*

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CERTIFICATE OF INTEREST

Pursuant to Federal Circuit Rule 47.4, counsel of record for *amicus curiae* the Coalition for 21st Century Medicine certifies the following:

1. The full name of every *amicus* represented by me/us is:

   The Coalition for 21st Century Medicine.

2. The name of the real party-in-interest represented by me is:

   Not applicable.

3. All parent corporations and any publicly held companies that own 10 percent or more of the stock of the *amicus curiae* represented by me are:

   None.

4. The names of all law firms and the partners or associates that appeared for the *amicus* now represented by me and that are expected to appear in this court are:

   None.

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STATEMENT OF INTEREST[1]

Amicus curiae the Coalition for 21st Century Medicine (the "Coalition") represents more than two dozen of the world's most renowned molecular diagnostic companies, clinical laboratories, and patient advocacy groups, as well as researchers, physicians, and venture capitalists involved in the industry, all of whom agree that continuous diagnostic innovation is essential to help patients and healthcare professionals make better, more informed treatment decisions and continue to improve patient outcomes. Coalition members make significant investments in the research, development, and clinical validation of diagnostic and prognostic technologies and rely on strong patent protection for those investments.

The incentives to innovate provided by the patent system depend above all on predictability. Only with the knowledge that patents will provide some period of exclusivity will the biotechnology industry continue to make the massive investment of time and resources needed to develop innovative diagnostic or prognostic tests and deliver these life-changing products to patients in need.

Recent panel decisions issued by this Court have improperly expanded the scope of the Supreme Court's narrow holdings in the life sciences to exclude entire

[1] No counsel to any party authored this brief in whole or in part, and no monetary contribution to the preparation or submission of this brief was made by any person or entity other than the Coalition and its counsel.

categories of invention from patent eligibility, injected an element of arbitrariness into patent examination, and made it nearly impossible for stakeholders to enforce thousands of issued claims. The Coalition submits this brief to help the Court understand the impact of its subject matter eligibility jurisprudence on an industry in which the predictability and stability of patent rights is paramount.

ARGUMENT

I. The Biotechnology Industry Desperately Needs The Full Federal Circuit's Guidance On What Constitutes Patent-Eligible Subject Matter Under *Mayo* and *Myriad*

This Court should grant *en banc* review of the panel decision in *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, Appeal Nos. 2014-1139 and 2014-1144, *slip op.*, Fed. Cir., June 12, 2015, to prevent expansion of the Supreme Court's narrow holdings under 35 U.S.C. §101 in *Association for Molecular Pathology v. Myriad Genetics*, 133 S. Ct. 2107 (2013), and *Mayo Collaborative Servs. v. Prometheus Labs*, 132 S. Ct. 1289 (2012). Recent panel decisions by this Court have improperly extended *Mayo* and *Myriad* to exclude entire categories of invention from patent eligibility. The U.S. Patent and Trademark Office (the "PTO") is left struggling to harmonize each new opinion with preceding case law interpreting §101, in a seemingly futile effort to provide clear guidance for patent examiners to evaluate patent applications under a straightforward, objective standard.

The biotechnology industry has thus watched panels of this Court interpret

narrow Supreme Court opinions too broadly. Taking its cue from this Court, the PTO has in turn interpreted those panel decisions expansively in its guidance for the examining corps. And the PTO's guidance is again over-extended by individual examiners to arbitrarily reject claims to subject matter that would have been patent eligible under the original narrow Supreme Court holdings.

The *en banc* Federal Circuit holds the pivotal position in this spiral of ineligibility. Grant of Sequenom's petition for *en banc* rehearing presents this Court with a unique opportunity to reverse this trend and provide clear, authoritative guidance on the patent eligibility of life science inventions.

II. Recent Supreme Court Case Law Excludes Relatively Little Subject Matter from Patent Eligibility Under 35 U.S.C. §101

This Court's approach to subject matter eligibility under §101 should be guided—as it once was—by the simple principle that a patent claim is presumptively eligible for patenting under §101 unless the plain language of the statute or binding precedent clearly excludes it. *Research Corp. Techs., Inc. v. Microsoft Corp.*, 627 F.3d 859, 868 (Fed. Cir. 2010) ("[T]his disqualifying characteristic should exhibit itself so manifestly as to override the broad statutory categories of eligible subject matter and the statutory context that directs primary attention on the patentability criteria of the rest of the Patent Act."). A careful reading of the Supreme Court's recent decisions on patent eligibility in the life sciences shows that the scope of subject matter excluded by each is quite modest.

The claims in *Mayo* recited a process of optimizing treatment of a known disorder with a known drug by monitoring the concentration of a known drug metabolite in the patient's blood. Crucially, the claim did not require any active step after determining the metabolite level, but merely appended "wherein" clauses describing the relationship between metabolite levels and drug efficacy or toxicity. Because the "wherein" clauses were mere "statements of the correlations," they did not require any action on the part of someone practicing the claimed method—*e.g.*, "a doctor using Mayo's test could violate the patent even if he did not actually alter his treatment decision in the light of the test"—and the Court concluded they did not meaningfully limit the scope of the claim. *Mayo*, at 1296.

> And so a patent that simply describes that relation sets forth a natural law. The question before us is whether the claims do significantly more than simply describe these natural relations. […] We believe that the answer to this question is no.

Id. at 1297.

To be patent eligible, a claim must "contain other elements or a combination of elements[…] sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the natural law itself." *Id.* at 1294. Thus, a faithful reading of *Mayo* leads to the conclusion that a process comprises patent eligible subject matter provided it differs in at least one material element from what was routine, conventional and well-understood in the art.

The Supreme Court's decision and reasoning in *Myriad* are even more

limited. The claims were held invalid because they expressly claimed the newly-discovered BRCA genes in terms of their full-length sequence and intrinsic biological functions. *Myriad*, 133 S. Ct. at 2118 ("[Myriad's] claims understandably focus on the genetic information encoded in the BRCA1 and BRCA2 genes"). The Court went out of its way to emphasize the limited extent of the subject matter it excluded from patent eligibility in the final sentence of the opinion: "We *merely* hold that genes and the information they encode are not patent eligible under §101 simply because they have been isolated from the surrounding genetic material." *Id.* at 2120 (emphasis added).

III. The *Ariosa* Panel Decision Exemplifies the Improper Expansion of the Supreme Court's Narrow Holding in *Mayo*

The full implications of this panel decision and its place in the context of other recent decisions[2] should be explored through merits briefing to the *en banc* Court, but the Coalition takes this opportunity to emphasize some important points.

A. The Majority Failed to Correctly Define the Subject Matter of the Claims

[2] *E.g.*, *PerkinElmer, Inc. v. Intema Ltd.*, 496 Fed. Appx. 65, 70 (Fed. Cir. 2012) (declaring a diagnostic method ineligible because "[t]hat an increased risk of fetal Down's syndrome produces certain analytical results is a natural process, an eternal truth that 'exists in principle apart from any human action.'"); *In re Roslin Inst. (Edinburgh)*, 750 F.3d 1333 (Fed. Cir. 2014) (extending *Myriad* to strike down a claim to a clearly non-natural, cloned animal under the "natural product" exception to §101); *In re BRCA1- & BRCA2-Based Hereditary Cancer Test Patent Litig. v. Ambry Genetics Corp.*, 774 F.3d 755 (Fed. Cir. 2014) (invalidating claims to diagnostic methods despite the Supreme Court's indication of eligibility).

The crux of patent eligibility analysis is to precisely define the subject matter of the claims and the natural phenomenon allegedly claimed. The panel instead loosely defined each, focusing on cell-free fetal DNA ("cffDNA") and its presence in maternal serum:

> Thus, the claims at issue, as informed by the specification, are generally directed to detecting the presence of a naturally occurring thing or a natural phenomenon, cffDNA in maternal plasma or serum. As we noted above, the claimed method begins and ends with a naturally occurring phenomenon.

Slip op., at p. 10 (emphasis added).

The summary of the invention in the patent-in-suit, however, more precisely framed the invention as an improved *laboratory process* for DNA testing: "This invention provides *a detection method performed on a maternal serum or plasma sample from a pregnant female*, which method comprises detecting the presence of a nucleic acid of foetal origin in the sample." U.S. Patent No. 6,258,540, at col. 2, lines 1-5 (emphasis added). Sequenom neither invented nor sought to claim cffDNA. Nor did Sequenom seek to preempt all methods of testing cffDNA, or even all methods of testing cffDNA in maternal blood.

The record suggests the presence of fetal proteins in maternal serum was well-known at the time of filing, as was "cell-free" DNA of other origin (*e.g.*, from tumors). More importantly, Sequenom's patent teaches it was known in the art that fetal cells can pass into the mother's blood. Diagnostic techniques had been devised to isolate these cells and analyze fetal DNA extracted from them, but these

techniques were expensive and time consuming. The phrase "cell-free fetal DNA" was therefore not an attempt to claim a natural phenomenon but instead a key claim limitation to distinguish *over the art*. Fifteen years ago, back when patent claiming and examination focused on prior art rather than ill-defined "natural phenomena," Sequenom appropriately emphasized that its methods used cell-*free* fetal DNA rather than the cell-*derived* fetal DNA known in the art.

Thus, the claimed invention is a significant *technical* improvement in the *laboratory process* for prenatal diagnosis, allowing laboratories to eliminate the costly and labor-intensive step of isolating fetal cells and then fetal DNA. Such an inventive improvement to the *technical* performance of an existing *technological* process is precisely what patents are for. *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2351 (2014) (striking down claims to a method that did not "effect an improvement in any other technology or technical field.").

B. The Majority Wrongly Suggests Diagnostic Claims Are *Prima Facie* Patent Ineligible

Language in the majority opinion suggests all diagnostic inventions fail the first step of the *Mayo* framework: "the claims at issue […] are *generally directed to detecting the presence of a naturally occurring thing or a natural phenomenon*, cffDNA in maternal plasma or serum." Slip op., 9 (emphasis added). This would mean that, as a matter of law, a method of detecting a natural phenomenon is "directed to" that natural phenomenon. Since anything "directed to" a natural

phenomenon fails the majority's vision of step one of *Mayo*, applying such a rule would render these methods *prima facie* ineligible and shift the burden to the patentee or applicant to prove the remaining elements of the claimed method add "significantly more" to the natural phenomenon under step two of *Mayo*.

This troubling expansion of *Mayo* sets a dangerous precedent for the precision medicine industry in particular because a typical diagnostic test begins by "detecting a natural phenomenon." If allowed to stand, this newly-minted expansion of *Mayo* would potentially render all diagnostic inventions *prima facie* patent ineligible and subject them to the vagaries of the subjective "significantly more" inquiry that the PTO has struggled to apply consistently.

The opinion's failure to mention *Diamond v. Diehr*, 450 U.S. 175 (1981), further shows a willingness to expand *Myriad* and *Mayo* to exclude ever more inventions. In *Diehr*, the Court held that a new combination of steps yielding a new technical result was, as a whole, patent eligible subject matter even if each step was known beforehand and the core of the process was an ineligible algorithm. *Diehr*, 450 U.S., at 181. Since Sequenom's claims are clearly patent eligible under this standard, failure to address *Diehr* is a significant omission.

C. The Majority Improperly Conflates the Patent Eligibility Test of *Mayo* with Traditional Obviousness Analysis

The majority also breaks with binding precedent by subtly yet significantly extending *Mayo* to exclude adaptations of what was routine and conventional if in

the court's view such adaptations are obvious in view of the newly discovered law of nature. The Court in *Mayo* limited its holding, emphasizing that what was routine and conventional *at the time of filing* cannot save a claim directed to a law of nature *per se*: "[T]he steps in the claimed processes (apart from the natural laws themselves) involve well-understood, routine, conventional activity *previously engaged in by researchers in the field*." *Mayo* at 1294 (emphasis added). *Mayo* thus permits importing at most 35 U.S.C. §102-like novelty analysis into §101.

The majority here appears to have boldly gone into territory where the Supreme Court declined to go by importing 35 U.S.C. §103-like obviousness:

> Where claims of a method patent are directed to an *application* that starts and ends with a naturally occurring phenomenon, the patent fails to disclose patent eligible subject matter if the methods themselves are conventional, routine and well understood *applications* in the art.

Slip op., 13 (emphasis added). This suggests that a routine *application* of the law of nature is ineligible. That is, if one skilled in the art could use routine skill to *arrive at* the claimed invention *after* being informed of a newly discovered law of nature, then the claim would be patent ineligible.[3]

[3] *See, e.g.*, *Federal Circuit Threatens Innovation: Dissecting the Ariosa v. Sequenom Opinion*, CPIP BLOG (June 23, 2015), http://cpip.gmu.edu/2015/06/23/federal-circuit-threatens-innovation-dissecting-the-sequenom-v-ariosa-opinion/ (last visited Aug. 24, 2015); Jeffrey A. Lefstin, *Ariosa v. Sequenom and the Path Ahead for Subject-Matter Eligibility*, http://patentlyo.com/patent/2015/06/sequenom-subject-eligibility.html (last visited Aug. 24, 2015).

Such a holding severely limits the scope of patent eligible subject matter because, once the principles underlying a new method are known, application of those principles to devise that method will often be obvious. This is contrary to Supreme Court's consistent holdings that *applications* of a law of nature are patent eligible, including most recently in *Myriad* where the Court noted "the first party with knowledge of [a natural product or law is] in an excellent position to claim applications of that knowledge." 133 S. Ct. at 2120.

The Coalition respectfully urges the full Court to unequivocally reject this aspect of the majority's opinion and clarify that *Mayo* sets forth *at most* a §102-like eligibility analysis limited to what was routine, conventional and well-understood *at the time of filing*. *Any* particular application of a law of nature is patent eligible, even those that may seem obvious in view of a new discovery.

IV. Conclusion

Development of innovative tests by Coalition members to enable better, more informed treatment decisions and improve outcomes requires significant investment. Those investments must be encouraged with the incentive provided by stable patent protection. The Coalition urges the Court to take this opportunity to stop the erosion of patent eligibility in the life sciences by issuing an authoritative *en banc* opinion faithfully applying narrow Supreme Court case law.

Respectfully submitted,

/s/ Benjamin G. Jackson

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CERTIFICATE OF SERVICE

I hereby certify I filed this *Amicus Curiae* Brief in Support Of Sequenom, Inc. and Sequenom Center for Molecular Medicine, LLC's Petition For Rehearing *En Banc* with the Clerk of the United States Court of Appeals for the Federal Circuit via the CM/ECF SYSTEM. Counsel registered with the CM/ECF system have been served by operation of the Court's CM/ECF SYSTEM per Fed. R. App. P. 25 and Fed. Cir. R. 25(c) on the 27th day of August, 2015.

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CERTIFICATE OF COMPLIANCE

The undersigned counsel for *amicus curiae* hereby certifies that:

1. This brief complies with the type-volume limitation of Federal Circuit Rule 35(g) because exclusive of the exempted portions it does not exceed 10 double-spaced pages.

2. The brief complies with the typeface requirements of Federal Rule of Appellate Procedure 32(a)(5) and type style requirements of Federal Rule of Civil Procedure 32(a)(6). The brief has been prepared in a proportionally spaced typeface using Microsoft Office Word Version in 14-point Times New Roman.

Dated: August 27, 2015

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